

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1-6. **(Cancelled).**

7. **(Previously Presented)** An apparatus for selectively interacting with electrically excitable tissue of a patient, said apparatus comprising:

an extension unit adapted to be electrically connected to an implantable pulse generator having a number of output sources to an implantable electrode array having a number of electrodes, wherein the number of electrodes is greater than the number of output sources, the extension unit comprising:

an array of programmable switches, each switch being connected between one output source and at least a portion of the electrodes, wherein at least one switch is configured to simultaneously trigger a plurality of electrodes.

8. **(Previously presented)** The extension unit of claim 7, further including:

a programming logic unit, coupled to the array of programmable switches, that receives programming signals and produces signals for configuring the programmable switches.

9. **(Original)** The extension unit of claim 7, wherein the array of switches comprises micro-relay switches that retain their switching state after power has been removed.

10. **(Original)** The extension unit of claim 7, further including an array of wave shaping circuits coupled to the array of switches and the output sources.

11. **(Original)** The extension unit of claim 10, wherein at least some of the wave shaping circuits are configured to change the frequency of signals received on the output sources.

12. **(Original)** The extension unit of claim 10, wherein at least some of the wave shaping circuits are configured to change the amplitude of signals received on the output sources.

13. **(Original)** The extension unit of claim 7, wherein the array of switches comprises mechanically adjustable switches.

14. **(Original)** The extension unit of claim 7, wherein the array of switches comprises magnetically adjustable switches.

Claims 15-22..**(Cancelled)**.

23. **(Previously presented)** An extension unit that electrically connects a distant diagnostic device having a number of input sources to an array of biomedical sensors, wherein the number of biomedical sensors is greater than the number of input sources, the extension unit comprising:

an array of programmable switches, each switch capable of being connected between one input source of the distant diagnostic device and at least a portion of the biomedical sensors, wherein at least one switch is configured to simultaneously trigger a plurality of electrodes.

24. **(Previously presented)** An apparatus for selectively measuring diagnostic information from a patient, said apparatus comprising:

a diagnostic device having a number of input sources that receive electrical signals;

a lead including an implantable biomedical sensor array having a number of biomedical sensors, where the number of biomedical sensors is greater than the number of input sources; and

an extension unit as set forth in claim 23.

25. **(Previously presented)** The apparatus of claim 24, wherein a first distance between the implantable diagnostic device and the programmable switches of the extension unit is greater than a second distance between the programmable switches of the extension unit and the biomedical sensor array.

26. **(Currently Amended)** An extension unit for electrically connecting an insulated set of conductors that extends from a distant housing of an implantable pulse generator having a number of output sources to a lead including an implantable electrode array having a number of electrodes, wherein the number of electrodes in the implantable electrode array is greater than the number of output sources of the implantable pulse generator, the extension unit comprising:

input lines for receiving input signals from the output sources of the distant implantable pulse generator via the set of conductors;

output lines for electrical connection with the electrodes of the implantable electrode array;

an array of programmable switches, each switch being connected between one input line and at least a portion of the output lines, wherein the switches are configured to simultaneously trigger a plurality of electrodes; and

whereby the extension unit enables a distant implantable pulse generator having a number of output sources to be used with a lead having an electrode array with a number of electrodes greater than the number of output sources.

27. **(Previously presented)** The extension unit of claim 26, further including:

a programmable logic unit, coupled to the array of programmable switches, that receives programming signals and produces signals for configuring the programmable switches.

28. **(Previously presented)** The extension unit of claim 27, wherein the array of switches comprises micro-relay switches that retain their switching state after power has been removed.

29. **(Previously presented)** The extension unit of claim 28, further including an array of wave shaping circuits coupled to the array of switches and the output sources.

30. **(Previously presented)** The extension unit of claim 29, wherein at least some of the wave shaping circuits are configured to change the frequency of signals received on the output sources.

31. **(Previously presented)** The extension unit of claim 29, wherein at least some of the wave shaping circuits are configured to change the amplitude of signals received on the output sources.

32. **(Previously presented)** The extension unit of claim 29, wherein at least some of the wave shaping circuits are configured to change the amplitude of signals received on the output sources.

33. **(Previously presented)** The extension unit of claim 26, wherein the array of switches comprises micro-relay switches that retain their switching state after power has been removed.

34. **(Previously presented)** The extension unit of claim 26, further including an array of wave shaping circuits coupled to the array of switches and the output sources.

35. **(Previously presented)** The extension unit of claim 34, wherein at least some of the wave shaping circuits are configured to change the frequency of signals received on the output sources.

36. **(Previously presented)** The extension unit of claim 35, wherein at least some of the wave shaping circuits are configured to change the amplitude of signals received on the output sources.

37. **(Previously presented)** The extension unit of claim 34, wherein at least some of the wave shaping circuits are configured to change the amplitude of signals received on the output sources.

38. **(Previously presented)** The extension unit of claim 26, wherein the array of switches comprises mechanically adjustable switches.

39. **(Previously presented)** The extension unit of claim 26, wherein the array of switches comprises magnetically adjustable switches.

40. **(Currently Amended)** An apparatus for selectively interacting with electrically excitable tissue of a patient, said apparatus comprising:

an implantable pulse generator having a number of output sources that transmit electrical signals;

a lead including an implantable electrode array having a number of electrodes, wherein the number of electrodes is greater than the number of output sources; and

an extension unit as set forth in claim 26; and
a set of conductors for connecting the implantable pulse generator to the extension unit.

41. **(Previously presented)** The apparatus of claim 40, wherein the implantable electrode array includes at least one biomedical sensor.

42. **(Previously presented)** The apparatus of claim 40, wherein the electrodes are arranged in a line.

43. **(Previously presented)** The apparatus of claim 40, wherein the electrodes are arranged in a multi-dimensional array.

Claims 44-46. Cancelled

47. **(New)** An extension unit for electrically connecting a set of conductors extending from an implantable pulse generator having a number of output sources to a lead including an implantable electrode array having a number of electrodes, wherein the number of electrodes in the implantable electrode array is greater than the number of output sources of the implantable pulse generator, the extension unit comprising:

a housing, the housing not in contact with an implantable pulse generator housing;
input lines for receiving input signals from the output sources of the implantable pulse generator via the set of conductors;

output lines for electrical connection with the electrodes of the implantable electrode array; and

an array of programmable switches positioned in the first housing, each switch being selectively connected between one input line and at least a portion of the output

lines, wherein the switches are configured to simultaneously trigger a plurality of electrodes, whereby the extension unit enables a distant implantable pulse generator having a number of output sources to be used with a lead having an electrode array with a number of electrodes greater than the number of output sources.

48. (New) The extension unit of claim 47, further comprising a programmable logic unit coupled to the array of programmable switches, the programmable logic unit configured to receive programming signals and produce signals for configuring the programmable switches, wherein the array of switches comprises micro-relay switches that retain their switching state after power has been removed.

49. (New) The extension unit of claim 47, wherein the array of switches comprises micro-relay switches that retain their switching state after power has been removed.

50. (New) The extension unit of claim 47, further including an array of wave shaping circuits coupled to the array of switches and the output sources.

51. (New) The apparatus of claim 40, wherein the extension unit comprises an extension unit housing and the set of conductors are configured so that a first distance between the extension unit housing and the housing of the implantable pulse generator is greater than a second distance between the extension unit housing and the array of electrodes.